STATE OF VERMONT
PUBLIC SERVICE BOARD

DOCKET NO. 6860

Petitions of Vermont Electric Power Company Inc. (VELCO) and Green Mountain Power Corporation (GMP) for a certificate of public good, pursuant to 30 V.S.A. Section 248, authorizing VELCO to construct the so-called Northwest Reliability Project	)))))

PREFILED TESTIMONY OF
CAROLE E. WELCH
ON BEHALF OF THE
VERMONT DEPARTMENT OF PUBLIC SERVICE

December 17, 2003

Summary: The purpose of Ms. Welch's testimony is to address VELCO's analysis of energy efficiency programs and measures and energy efficiency and load management measures as an alternative or partial alternative to the NRP.

PREFILED Testimony
of
Carole E. Welch

Q. Please state your name and occupation.

A. My name is Carole Welch. I am an Energy Policy & Program Analyst for the Vermont Department of Public Service ("Department" or "DPS").

Q. Please summarize your professional background and experience.

A. I have been an Energy Policy & Program Analyst for the DPS for twelve years. During that time, I have reviewed numerous utility requests for cost recovery of demand side management (DSM) expenditures and ACE (Accounting Correction for Efficiency) amounts in rate filings. I have been extensively involved in negotiations to set the energy efficiency charge for the years 2000 - 2004 (Dockets 5980, 6429, 6564, 6741, and 6874). I conduct substantial review and evaluation of Efficiency Vermont's accomplishments and activities. In the past, I reviewed the DSM component of utility integrated resource plans submitted to the Vermont PSB for approval. Prior to my employment with the DPS, I was an Area Energy Agent for the University of Vermont (UVM) Extension Service. I have a BA in Mathematics from UVM and have completed graduate level courses in natural resources planning at UVM.

Q. Have you ever testified before the Vermont Public Service Board?

A. Yes, I have testified in Dockets 6750, 6120/6460, 6018, 5859, 5841/5859, 5863, 5809, 5701/5724, 5656, and a number of 5270 dockets.

Q. What is the purpose of your testimony?

A. My testimony addresses VELCO's analysis of energy efficiency programs and measures and energy efficiency and load management measures as an alternative or partial alternative to the NRP or comparable transmission solution. I also address the potential role of additional energy efficiency and demand management strategies in reducing congestion costs.

Optimal Energy Analysis

Q. Please discuss the results of your review of the analysis of DSM potential resources performed by Optimal Energy for VELCO.

A. Optimal Energy undertook an assessment of summer coincident peak capacity and energy reductions available from energy efficiency resources in two VELCO planning zones, the Inner and Metro-Area zones, and the Northwest and Northwest/Central zones. Optimal determined the amount and cost of acquiring available energy efficiency resources from a targeted DSM campaign. Summer peak capacity savings and energy savings were estimated assuming very aggressive energy efficiency market implementation strategies in residential, commercial, and industrial markets, including sustained marketing to consumers and equipment suppliers; financial incentives covering the full cost of retrofit measures and the full incremental cost of new construction measures; comprehensive technical and information services for market participants and complete customer service delivery. The study concludes that, over a 10 year period, aggressive energy efficiency programs could cost effectively acquire a total of 213 MW of summer peak capacity at a total societal cost of $618 million.

Q. How were the current efficiency efforts of Efficiency Vermont and the Burlington Electric Department considered?

A. Optimal's analysis included the resources acquired from existing Efficiency Vermont ("EVT") and Burlington Electric Department ("BED") EEU program activities. The savings impacts expected from activities at EEU funding levels totaling about $14.0 million annually, were used by VELCO to adjust the load forecast used to assess the need for the NRP.

Q. Please describe your assessment of the results of the Optimal analysis.

A. VELCO calculations show Optimal's analysis reflects an average cost per saved summer coincident peak kW of about $3,500/kW for efficiency resources beyond what is expected to be provided by EVT and BED from current activities. For the inner and metro zone only, the cost is estimated at $3,352/kW. Comparable EVT and BED existing activities are expected to cost $2,227 and $1,855 respectively over the 10 year planning horizon. Current EVT and BED activities are less costly because they focus primarily on the so-called "lost opportunity" markets. That is, the existing programs are designed to acquire efficiency resources at the time of new construction, equipment purchase, and other market activities. It is less expensive to purchase efficiency at the time of new construction or equipment purchase than to increase the efficiency of existing buildings or equipment. Not only are the measure costs higher, but it is generally more difficult to persuade a consumer to change out existing working equipment for a more efficient option. This results in additional non-measure costs that increase the overall cost of acquiring the efficiency resource. These increased costs are reflected in Optimal's cost estimates to acquire the estimated savings.

Q. These costs seem high.[1] Please comment.

A. If the cost of efficiency is calculated to assess only one of the benefits, such as transmission capacity, and all other identified and quantified benefits are ignored, the unit cost of transmission capacity is substantial. If on the other hand, one removes from the total efficiency costs the avoided generation, distribution, and fossil fuel benefits of the efficiency, the cost of the transmission capacity benefit is a negative. As VELCO witnesses Plunkett, Mosenthal, and Neme point out in their testimony, the avoided transmission benefits of efficiency programs are small compared to the energy, avoided generation and distribution capacity, and non-electric fossil fuel and water savings.

Q. Did VELCO use this calculated cost of kW capacity for efficiency programs to determine that the NRP was the most cost effective option to provide increased transmission capacity?

A. No. As shown in VELCO witness Montalvo's testimony on page 5, VELCO compared the net societal cost of the NRP with five alternative resource configurations. The ARC 5 analysis uses the total societal benefit amount from the 74 MW of DSM-based peak demand savings in this alternative to offset the costs of the ARC 5. A calculated cost per kW of transmission capacity from efficiency was not used to justify the NRP.

Q. What effect have existing Vermont efficiency efforts had on summer peak demand?

A. The existing efficiency activities of Efficiency Vermont ("EVT") and Burlington Electric Department ("BED"), previous BED programs, and probably previous electric utility DSM efforts have had some impact in deferring the need for increased transmission capacity to serve

[1] In its 7/17/2003 order in Docket No. 6792 that approved the Northern Loop project, the Public Service Board questioned the cost of efficiency peak capacity VELCO apparently used in its alternatives analysis in that docket.

northwest Vermont. Since 1995, BED's efficiency programs have acquired about 5 MW of summer coincident peak capacity savings. For the three year period 2000 - 2002, EVT reported a statewide total of 10 MW summer coincident peak capacity savings.

Prior to the year 2000, the electric utility DSM programs reported only their system coincident peak savings. As Vermont utilities have historically been winter peaking systems, the coincident peak data reflects winter peak savings. There is no data, except BED's, on impact of prior utility DSM programs on summer peak. However, it is reasonable to assume that lighting, refrigeration, water heating fuel switching, and commercial HVAC measures installed during the 1990's have had some impact on the summer peak. Still, these programs focus on capturing energy (kWh), not demand (KW) savings. Their impact on the summer peak is lost in the tremendous growth experienced in northwest Vermont over the past decade.

Q. What is your conclusion regarding Optimal's analysis?

A. I find the Optimal analysis reasonable and adequate, given its task of assessing what efficiency DSM is available in the VELCO identified zones that VELCO could then use to analyze alternatives to the NRP.

Q. Turning to the energy efficiency component of the VELCO alternative resource configuration 5 ("ARC 5"), please comment.

A. The analysis conducted by LaCapra for VELCO shows ARC 5 to be the most societally cost effective alternative to the NRP due to the large net societal non-transmission benefits of the efficiency component. LaCapra considers that the NRP and ARC 5 are roughly comparable with respect to total societal costs, considering the inherent uncertainties in the assumptions embedded in the analyses. VELCO's reasons for recommending the NRP instead of ARC 5 can be summarized as: (1) the net capital costs of ARC 5 are much greater

than the NRP; (2) there is greater risk and uncertainty regarding the acquisition of generation and efficiency alternatives in the needed timetable; and (3) the generation and efficiency alternatives are not eligible for PTF treatment.

Q. Do you agree with VELCO's/LaCapra's assessment regarding the risk and uncertainty regarding the likelihood of acquiring the DSM needed to achieve ARC 5?

A. I do. To achieve summer capacity savings greater than Burlington Electric Department's current summer load from efficiency programs within the needed time period is unprecedented.[2] While it is theoretically possible, as shown by the Optimal analyses, this level of sustained aggressive targeted DSM has not been implemented elsewhere, so there is a risk that the savings would not be realized within the necessary time. In addition, it is important to keep in mind that ARC 5 includes additional generation as well as efficiency resources to avoid the major NRP elements that might be displaced, as identified by VELCO. The LaCapra analysis shows that the DSM only, identified in ARC 5, could defer one element of the upgrade, a portion of a second phase of the Granite substation upgrade, for a maximum of 8 years at a cost considerably higher than the savings from the transmission deferral.

Q. Do you consider VELCO's DSM analysis complete?

A. LaCapra's analysis assumed load reduction resources only from those efficiency efforts identified in the Optimal Energy analysis. Optimal's analysis does not include an assessment of load management, load response, or other non efficiency DSM options as a tool to lower peak demand. Thus, VELCO did not consider nor incorporate the potential for load management

[2] BED reported a demand of 65.4 MW on July 3, 2002.

and load control strategies in its assessment of cost effective alternatives to the NRP. Therefore, the DSM analyses is incomplete.

Q. Is this a fatal flaw?

A. Not in my opinion. As LaCapra points out, it is unlikely that additional load reduction strategies of the magnitude required to replace the NRP could be obtained. Vermont currently utilizes numerous interruptible contracts that are presumably being used already to reduce the summer peak, so the potential for further reductions through this mechanism may be limited. However, participation in the ISO-NE load response program participation could be greater. When analyzing DSM alternatives, the consideration should be comprehensive and include further resources from the ISO-NE program, other load response strategies, and other load management techniques along with energy efficiency options.

Q. What about the role of DSM in reducing congestion costs?

A. VELCO projects congestion costs will be $7.7 million in 2005, compared to VELCO's $4.2 million of comparable costs in 2002. This suggests more can be done in the short term to reduce congestion costs, including increased load management and demand response activities, increased efficiency investments, and possibly increased focus of EVT activities in identified transmission constrained area.

If the issue of greater EVT focus in constrained areas were examined, further study would be needed to assess the benefits and costs of a redirection of EVT's mission. The EEU has limited funds as well as limited flexibility with regard to using EEC funds to target a particular geographic area. Under the legislation establishing the EEU, the Board must ensure that all retail consumers, regardless of retail electricity or gas provider, will have an opportunity to participate in and benefit from, energy efficiency programs. The memorandum of

understanding ("MOU") approved by the Board in its 9/30/1999 order in Docket No. 5980 contains language requiring the EEU programs to reflect expenditure levels that, over time, correspond to electric energy use by geographic region and customer class throughout the state. The MOU also provides that the distribution utilities are responsible for T&D planning and its associated implementation, including cost effective DSM to defer or avoid transmission and distribution investments. Finally, to date no analysis has been conducted to determine the benefits and costs of such a shift in EVT focus.

Q. Based on your review of VELCO's analysis, do you agree that DSM resources are not a viable option to the NRP or comparable transmission solution?

A. Given the high capital costs to Vermont ratepayers compared to a transmission solution, the lack of PTF treatment for DSM, and the magnitude of the apparent immediate transmission capacity need, it is my opinion DSM is not a robust option for deferring or avoiding the NRP or any of its major components.

Q. Does this conclude your testimony?

A. Yes, at this time.